Scintillation Study: Update

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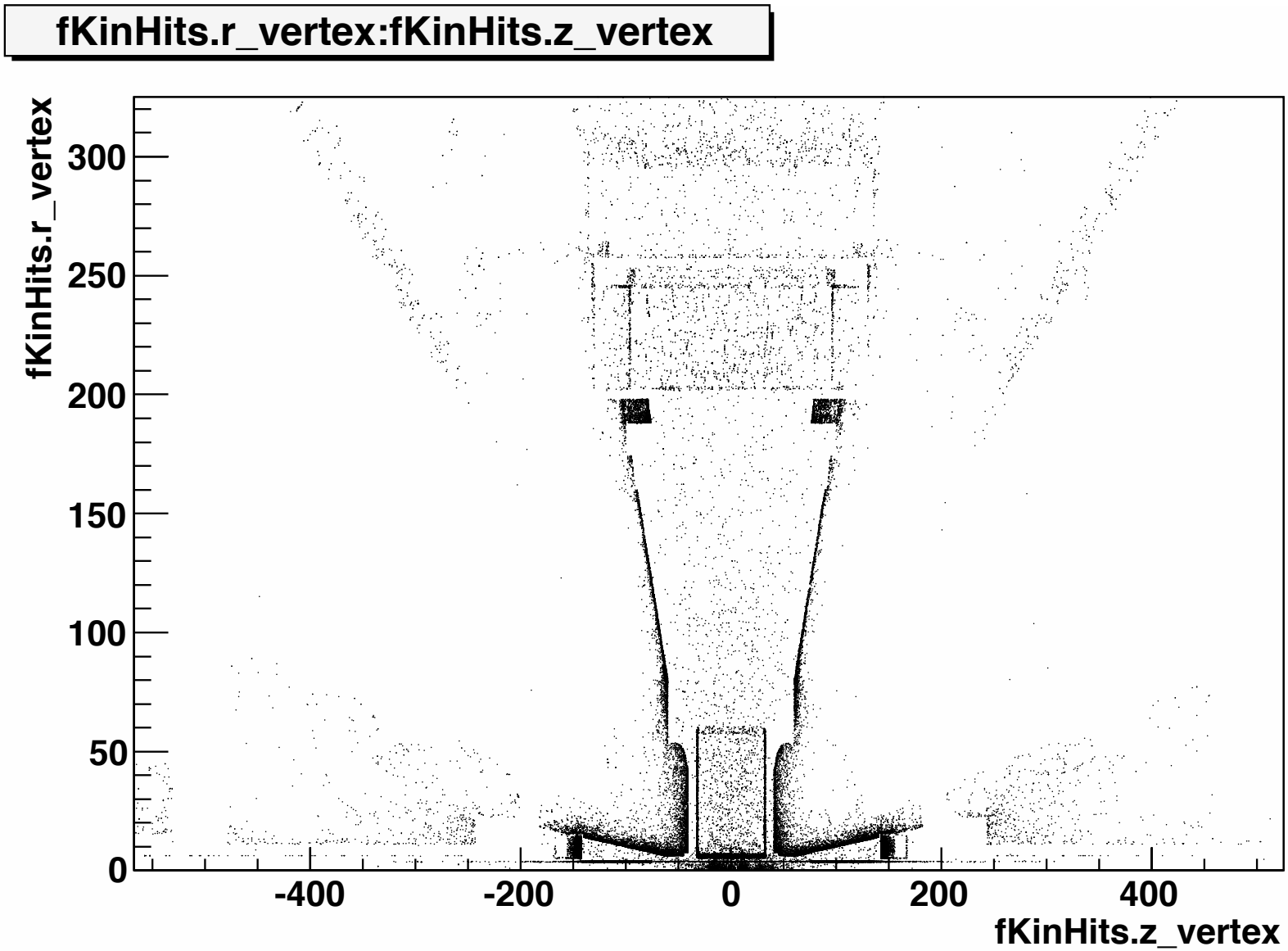
General Plan

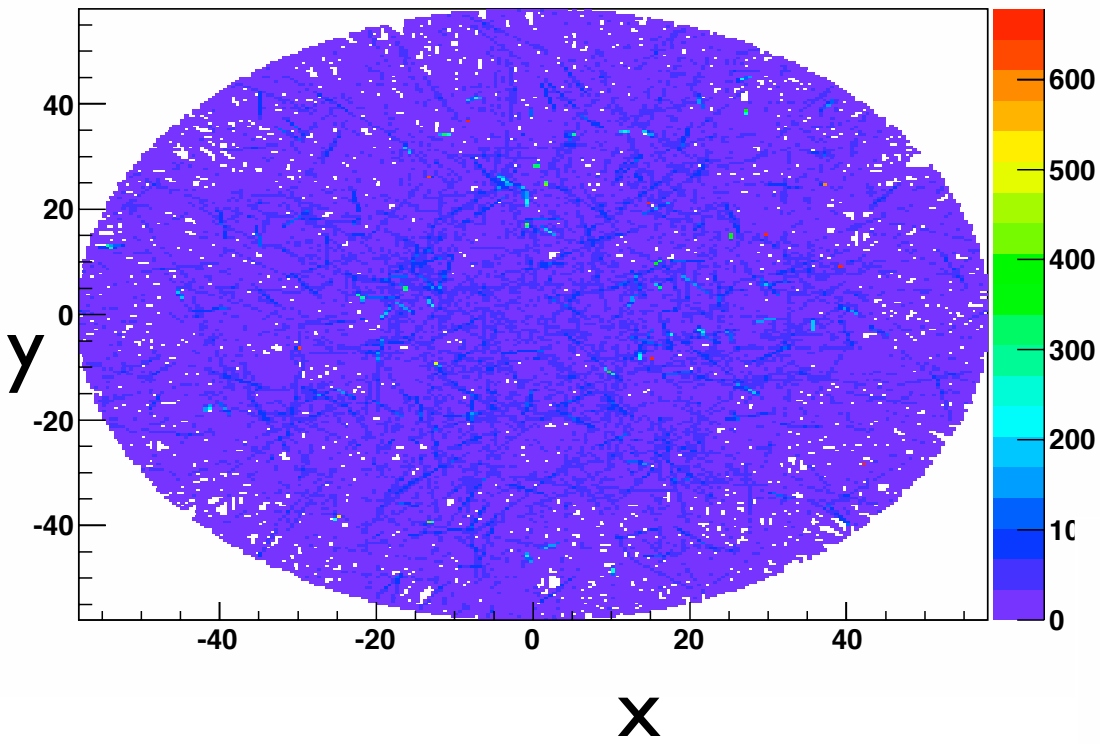
- no scintillation in pisa
- use HIJING events run through PISA to get the distribution of scintillation
  - use general PISA information on charged tracks (KinHits)
  - drawback: approximate track as a straight line, don't take into account bending of the tracks in field
- generate scintillation weighted by HIJING density and trace to HBD, what fraction of light is blocked by the shades?

Where do particles come from?



all particles, 10 HIJING events

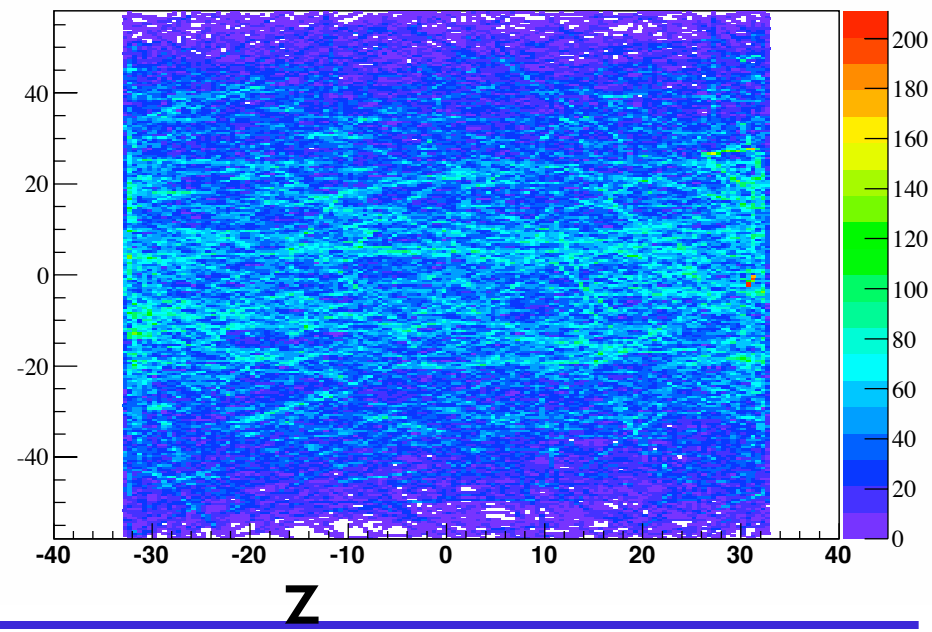
where do particles go?



tracing charged particles through the HBD gas

binning:

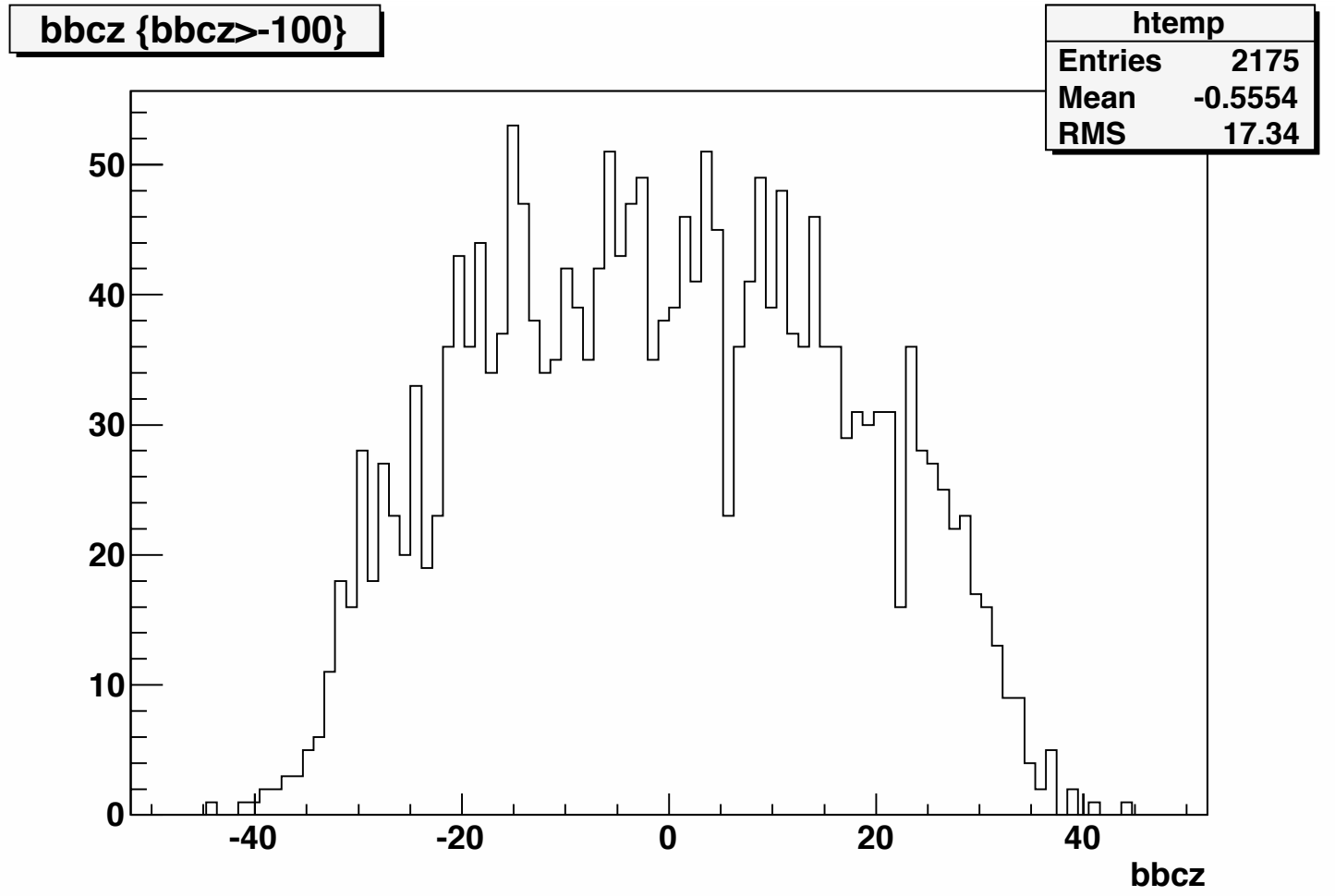
0.5cm x 0.5cm x 0.5cm



shades

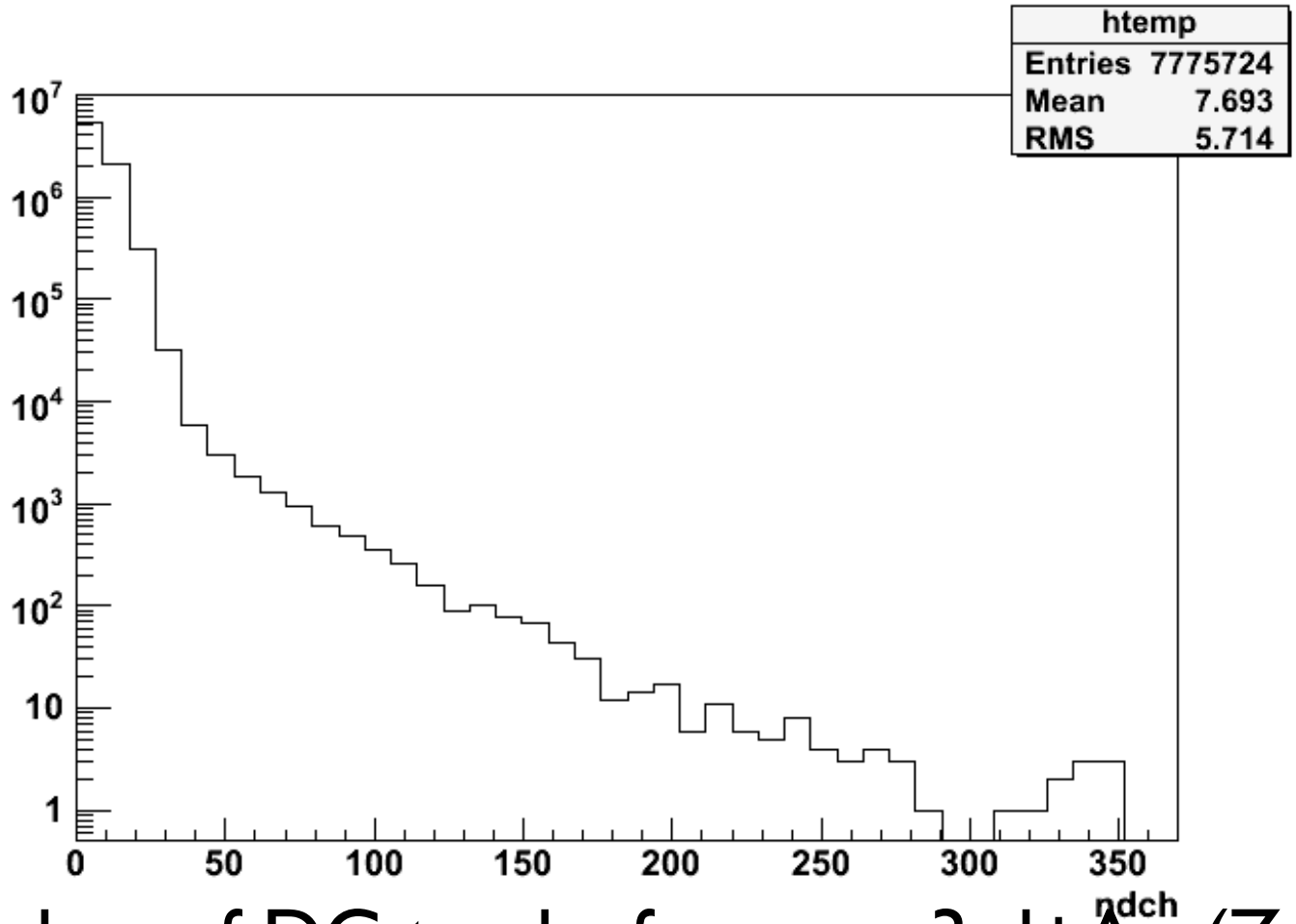
- initial idea:
  - grid in phi and z, 3 parameters, spacing in each direction and the height
  - other shades to block inactive regions of the detector
    - HV panels
    - large z, small r region, need to use vertex distribution to define large z
    - haven't had time to model these options, but it shouldn't result in loss of signal

BBC Vertex Distribution



run 230665

scintillation in d+Au?



number of DC tracks from run3 d+Au (Zvi)

>99% have less than 50 tracks

(note the log scale)

issues

- initial results are inconsistent with simple solid angle estimates
  - assume there's a bug in defining the shades
  - working on it
- the details that come from GEANT are left out, dE/dx, bending inside HBD
  - probably not a huge effect
    - one handle is to use differing PISA information to study how sensitive scintillation rejection is to the source distribution